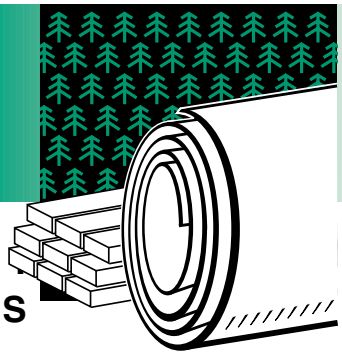
FOREST PRODUCTS

Project Fact Sheet



Energy and Environmental Innovations for Chemically Preserved Wood Wastes

Benefits

- Reduces load on landfills
- Resolves a growing waste-disposal problem for utility and construction industries
- Creates a new energy source (fuel gas) from waste material
- Recovers metals with value to the chemical industry
- Avoids release of arsenic into the environment
- Substantially reduces or eliminates hazardous-waste ash

Applications

The proposed approach for disposing of chemically preserved wood wastes will have immediate applications in the utility and construction industries, where disposal of CCA-treated wood wastes is emerging as an increasingly serious problem. The utility sector, the largest user of chemically treated wood, has the most to gain from the successful development of a superior disposal process. Producers of CCA will also benefit, however, both from the enhanced future of preserved-wood markets and the access to recovered metals.

A rethinking of combustion temperatures and conditions yields promising results in developing safe means of disposing of treated wood

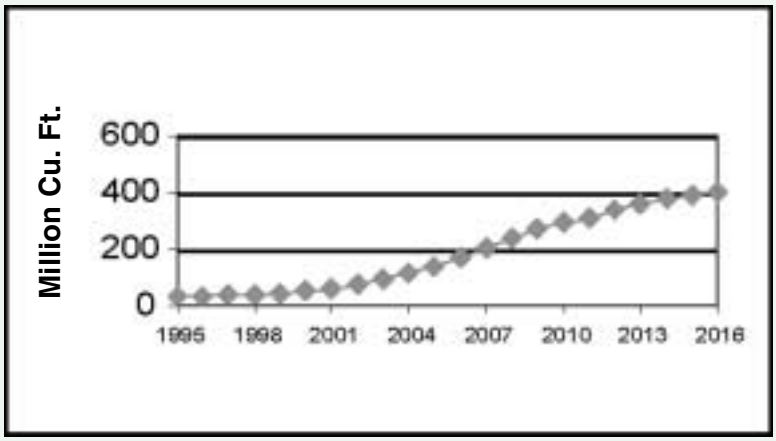
Utility poles, heavy timbers, and some construction lumber are commonly treated with chromated copper arsenate (CCA) to preserve the wood's integrity and extend its useful life. Though effective in achieving this purpose, CCA, due to its toxicity, poses a difficult dilemma when the wood is damaged or obsolete and disposal is required.

The dominant disposal method in the United States is landfill burial. However, the sheer volume of biomass involved would place a considerable burden on our limited landfill capabilities. In addition, the waste decomposes very slowly, and there are concerns about the toxic metals finding their way into the soil and groundwater.

Incineration is a second disposal option, but burning CCA-treated wood in conventional incinerators releases dangerous levels of arsenic into the atmosphere. The resultant ash also contains excessive levels of hazardous-waste copper and chromium, which require expensive disposal procedures.

With the help of an industry partner, the Georgia Tech Research Institute has developed a more viable incineration option. Early results suggest that an oxygen-poor environment might dramatically reduce or even eliminate the release of arsenic. If these and other promising results can be substantiated, industry will finally have an environmentally favorable means of disposing of CCA-treated wood wastes.

CCA-Treated Wood Wastes Disposal



The disposal of CCA-treated wood wastes is expected to increase dramatically by 2016. Georgia Tech Research Institute's method of pyrolizing wood wastes reduces the amount of CCA-treated wastes that must be sent to landfills.

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Project Description

Goal: The goal of this project was to move the invention into the technical feasibility stage of new product development.

This process converts biomass to fuel gas while leaving only a small quantity of metallic residue. The gas is sufficient to fuel the pyrolysis process. The metals may be suitable for recovery and reuse, possibly by the same industry that produces CCA and other preservatives.

Georgia Institute of Technology developed this new technology with the help of a grant funded by the Inventions and Innovation Program in the Department of Energy's Office of Industrial Technologies.

Progress and Milestones

Under the Inventions and Innovation grant, the proposed technology progressed from the "Conceptual" to the "Technical Feasibility" stage of new product development. Early laboratory-scale testing has been completed.

The Georgia Tech Research Institute continues to work closely with a key industry player to move the technology forward. This private partner—recognizing the enormous market potential of a safer, cleaner means of disposing of CCA-treated wood wastes—is cooperating with Georgia Tech by providing critical staff, facilities, and cost-sharing.

Economics and Commercial Potential

With the exceptions of utility poles, which are treated primarily by oil-borne preservatives, and crossties, treated primarily by creosote, most wood products over the last 15 years have been treated with waterborne preservatives. Because of its superior adherence, performance, and reduced cost, CCA represents 95% to 98% of all waterborne preservative applied. These treated wood products have already started coming out of service, and their volume will increase dramatically in the next decade. Without a suitable disposal option, serious concerns are being raised about how the enormous volumes of CCA-treated wood wastes will be handled.

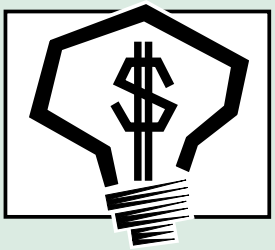
Industry representatives agree that pyrolysis is a disposal option worth exploring in depth. There is further agreement that this new technology will have to be capable of operating in a typical waste-management economic structure, involving revenue streams from both tipping fees and the sale of recovered resources. If the proposed pyrolysis process can meet these requirements while also effectively disposing of CCA-treated wood wastes, it will be well received by industry.

Industry of the Future—Forest Products and Agenda 2020

*In November 1994, DOE's Secretary of Energy and the Chairman of the American Forest and Paper Association signed a compact, establishing a research partnership involving the forest products industry and DOE. A key feature of this partnership was a strategic technology plan-**Agenda 2020: A Technology Vision and Research Agenda for America's Forest, Wood, and Paper Industry**. Agenda 2020 includes goals for the research partnership and a plan to address the industry's needs in six critical areas:*

- *Energy performance*
- *Environmental performance*
- *Capital effectiveness*
- *Recycling*
- *Sensors and controls*
- *Sustainable forestry*

OIT Forest Products Team Leader: Valri Robinson (202) 586-0937.



The Inventions and Innovation Program works with inventors of energy-related technologies to establish technical performance and conduct early development. Ideas that have significant energy savings impact and market potential are chosen for financial assistance through a competitive solicitation process. Technical guidance and commercialization support are also extended to successful applicants.

Project Partners:

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Inventions and Innovation Program
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